**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



Applicants: Philip Louis Taylor

Serial No: 09/842,613 Art Unit: 1714

Filed: April 26, 2001 Examiner: T. Yoon

For: *Aqueous Coating Composition Giving Coatings Having Improved Early Hardness And Tack Resistance*

Commissioner of Patents
P. O. Box 1450
Alexandria, VA 22313-1450

**RESPONSE TO OFFICE ACTION**

Sir:

Submitted with this Response is a Petition for Extension of Time, to extend the period for response one month, to and including February 16, 2004. The Commissioner is hereby authorized to charge $110.00, the fee for a one month extension of time, to Deposit Account No. 50-1868. It is believed that no additional fee is required with this submission. However, should an additional fee be required, the Commissioner is authorized to charge the fee to the Deposit Account No. 50-1868.

**Remarks**

Rejection Under 35 U.S.C. § 112, first paragraph

The Examiner's attention is drawn to the decision of the Board of Appeals in the parent application, U.S.S.N. 09/232,110, pages 7 – 10, mailed on July 29, 2003. Copies are enclosed. The Board concluded the application fully enables claims of the scope pending in this application. Therefore, the rejection of claims 1 and 11 - 26 under 35 U.S.C. § 112, first paragraph should be withdrawn.

**AMENDMENT AND RESPONSE TO OFFICE ACTION**

Rejection under 35 U.S.C. § 112, first paragraph

The Examiner asserts that the term "non-crystalline film" in claim 1 is not described in the specification and therefore constitutes new matter. The Examiner fails to understand the definitions of crystalline ($D_{max}$) and non-crystalline ($D_{min}$) density. $D_{max}$ is the density achieved when all of the polyester particles are fully crystalline (p. 3, lines 2 – 5). $D_{min}$ is the density achieved when all of the polyester particles are fully non-crystalline (p. 3, lines 5 – 9). Particles which are partially crystalline, will have an intermediate density lying between $D_{min}$ and $D_{max}$. The specification discloses that 60 wt% of the particles of polyester (including copolyester) must have a density of less than 102% $D_{min}$ (p. 5, lines 25 – 34). This means that the majority of the polyester particles are ***highly non-crystalline*** with only a small portion of crystallinity being tolerable. $D_{min}$ for poly 3-hydroxybutyrate is 1.18 g/cm$^3$, therefore the hydroxybutyrate particles disclosed in the specification should have a density of less than 1.20 g/cm$^3$ (p. 6, lines 31 – 36).

The preferred composition is a copolymer of 3-hydroxybutyrate (3HB) and 3-hydroxyvalerate (3HV) in which 3HV is present in 0 – 40 mole% and 60 wt% of the particles should have a density less than $D_{min}$ + 0.3 ($D_{max} - D_{min}$). Where the 3HV component is 20 mole%, $D_{max}$ for the polymer is 1.231 g/cm$^3$ and $D_{min}$ for the polymer is 1.176 g/cm$^3$. The density of the preferred polymer is 1.195 g/cm$^3$, which is ***highly non-crystalline*** (p. 7, lines 8 – 20). Upon drying, crystallization is initiated in the highly non-crystalline regions of the film leading to numerous crystallized zones or "crystallites" in which adjacent chains are held together via lateral attractions (physical cross-linking) (p. 6, lines 7 – 14). This phenomenon does not occur through out the entire film and thus non-crystalline regions still exist in the polymer film. It would be incorrect to assert that a non-crystalline or amorphous polymer film is crystalline simply because some of the amorphous regions have formed "crystallites". It is clear

that the term "non-crystalline film" does not constitute new matter and does find support within the specification. The specification describes the preparation of a non-crystalline water-resistant polyester film at ambient temperature in Examples 1 and 2 (p. 9, line 22 – p. 10, line 30). Polyhydroxyalkanoates are a type of polyester.

Rejection Under 35 U.S.C. 103, obviousness

Claims 1 and 11 – 26 were rejected under 35 U.S.C. § 103 as obvious over U.S. Patent No. 5,451,456 to Marchessault et al. ("Marchessault") or the published corresponding PCT application, PCT WO 91/13207. The Examiner further rejected claims 1 and 11 – 26 as obvious under 35 U.S.C. 103 over Marchessault in view of U.S. Patent No. 4,016,306 to Miyagawa et al. ("Miyagawa"). The applicant respectfully traverses the rejections.

***Marchessault et al***

Marchessault describes latex films formed from polyhydroxyalkanoate compositions at elevated temperatures and pressures (100 – 140°C, 1000 – 5000 psi) or through addition of solvents (chloroform and other halogenated solvents, ethylene or propylene carbonate, acetic anhydride, dimethylformamide, and alcohols) (col. 7, lines 24 – 25, 29 – 31, and 38 – 44). As noted at col. 3, lines 59 – 60, the polyhydroxyalkanoate granules used to make the latexes are essentially non-crystalline and the "**dried material is crystalline**" (col. 3, line 60).

The Examiner's assertion that the PHB/V copolyester disclosed by Marchessault would form a water-resistant non-crystalline film at ambient temperature if the applicant's coating composition forms such a film is incorrect. Such a statement is clearly wrong and blatantly ignores the importance of the density of the polyesters used in the composition. Masserchault describes employing between 10 and 50 %, and preferably 15 – 25 %, by weight of the solids of a conventional film forming polymer and copolymers with PHA particles to form a film-forming

coating at elevated temperatures (100 - 140°C) and pressures (1000 – 5000 atm) (col. 7, lines 20 – 32). In Example 1, Marchessault teaches a 21% 3HV/ 79% 3HB polymer film with little or no strength when dried at room temperature (col. 8, lines 26 – 31) and notes that the film can be readily rinsed off a surface to which it is applied (col. 6, lines 53 – 56). The water-resistance, hardness and tack-resistance observed in latex films are a function of the degree of cross-linking present in the polyester films (p. 6, lines 3 – 17; p. 10, lines 2 – 6). The high crystallinity of the compositions taught by Marchessault require high temperatures and pressures or use of organic solvents in order to exhibit even moderate cross-linking (Example 1 and col. 7, lines 23 – 25). In Example 3, Marchessault describes exposing an air-dried film to a small amount of chloroform. After 24 hours, the film was allowed to air dry at room temperature. **Chloroform vapor and the dry film combine to produce an extremely smooth and tough film.** Marchessault clearly fails to teach the densities of any of the polyesters used in his compositions as well as the effect density will have on polymer morphology.

The polyester films disclosed in the present specification achieve extensive physical cross-linking (fusing) at ambient temperatures **without organic solvents** due to the amorphous nature of the polyester particles. Upon drying, crystallization is initiated in the highly non-crystalline polyester particles leading to the formation of numerous crystalline zones or "crystallites" in which adjacent polyester chains are held together by lateral attractions (p. 6, lines 7 – 14) as opposed to chemical cross-linking.

Examples 1 and 2 of the present specification describe an aqueous dispersion of hydroxy alkanoate copolyester consisting of approximately 80 mole% 3-HB and 20 mole% 3-HV and mixed 90:10 by weight with an aqueous dispersion of a conventional acrylic film forming copolymer. 67 wt% of the polyester particles had a density below 1.18 g/cm$^3$ (p. 9, lines 22-29).

Comparative tests were done on formulations without any hydroxyalkanoate copolyester. Table 1 clearly shows that the copolyesters of the present specification when mixed 90:10 by weight with conventional film forming polymers produce films with excellent scratch, tack and water resistant properties. In stark contrast, films made from conventional film forming polymers only exhibited poor water and scratch resistance as well as poor tack resistance.

In summary, Marchessault teaches latex films formed from polyhydroxyalkanoate compositions at elevated temperatures and pressures (100 – 140°C, 1000 – 5000 psi) or through the addition of organic solvents. Such films exhibit poor tack and water resistance at ambient temperatures due to the lack of chemical cross-linking between the crystalline particles. In contrast, the compositions (paints and varnishes) of the present specification are intended for application to non-fibrous materials such as drywall, masonry (brick, concrete and stone), metal and plastics. The use of organic solvents, such as chloroform, as taught by Marchessault would be incompatible with plastic substrates. The compositions of the present specification exhibit accelerated hardness and tack resistance over traditional paints and varnishes due to the high degree of lateral cross-linking at ambient temperature. Such observations are due to the amorphous nature of the polymer particles. Marchessault provides no motivation or teaching that would lead one skilled in the art to select an aqueous film-forming polymeric composition that forms a **non-crystalline film** wherein at least 60% of the polyhydroxyalkanoate polyester particles have a minimum density of less than 102% and forms a water-resistant film at room temperature. The resulting properties and application conditions of the polymer coatings in the present specification were unexpected and thus could not have been obvious in light of Marchessault to one with ordinary skill in the art. Accordingly, Marchessault or WO 91/13207 would not render claims 1 and 11 – 26 *prima facie* obvious under 35 U.S.C. 103.

***Miyagawa et al.***

Miyagawa teaches acrylic compositions, not polyester compositions. These acrylic compositions are obtained by photo-initiated polymerization of an acrylic monomer in an aqueous medium, which results in a high degree of chemical cross-linking (covalent bonds). In contrast, the compositions of the present specification are polymerized prior to application to a surface and physical cross-linking (lateral attraction) is accomplished by the formation of crystallites after drying. There is no teaching that would lead one skilled in the art to substitute a polyester for the acrylic resin composition disclosed by Miyagawa et al.

Allowance of all claims 1 and 11-26 is correctly solicited.

Respectfully submitted,

Patrea L. Pabst
Reg. No. 31,284

Date: February 17, 2004

HOLLAND & KNIGHT LLP
Suite 2000, One Atlantic Center
1201 West Peachtree Street, N.E.
Atlanta, Georgia 30309-3400
(404) 817-8473 (Telephone)
(404) 817-8588 (Fax)

**CERTIFICATE OF FACSIMILE TRANSMISSION**

I hereby certify that this, response to office action and any documents referred to as attached therein, are being facsimile transmitted on this date February 17, 2004, to the Office of Petitions, U.S. Patent and Trademark Office, Alexandria, VA, 20231.

Peggy Bailey

Peggy Bailey

Date: February 17, 2004

# 1423634_v1

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PHILIP LOUIS TAYLOR

Appeal No. 2001-2070
Application 09/232,110

ON BRIEF





Before PAK, TIMM, and JEFFREY T. SMITH, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 and 11 through 26 which are all of the claims pending in the above-identified application.

APPEALED SUBJECT MATTER

At page 3 of the Brief under the heading "GROUPING OF CLAIMS," appellant states that

page 7, with the Specification, page 8, lines 1-2. Thus, the examiner fails to explain, much less demonstrate, why one of ordinary skill in the art, knowing the range of minimum film forming temperatures of monomers designated as having "high" and "low" minimum film forming temperatures, cannot reasonably ascertain what monomers are within the scope of the appealed claims. From our perspective, this application disclosure reasonably apprises one of ordinary skill in the art a standard by which monomers having "high" and "low" minimum film forming temperatures can be determined.

Accordingly, we reverse the examiner's decision rejecting claims 15 through 17 and 22 through 24 under 35 U.S.C. § 112, second paragraph, as being indefinite.

35 U.S.C. § 112, First Paragraph (Enablement)

The court in In re Gaubert, 524 F.2d 1222, 1226, 187 USPQ 664, 667 (CCPA 1975) stated

> [t]o satisfy §112, the specification disclosure must be sufficiently complete to enable one of ordinary skill in the art to make [and use] the invention **without undue experimentation**, although the need for a minimum amount of experimentation is not fatal * * *. Enablement is the criterion, and every detail need not be set forth in the written specification if the skill in the art is such that the disclosure enables one to make the invention. [Emphasis added.]

The determination of what constitutes "undue experimentation" in a given case requires the application of a standard of reasonableness, having due regard for the breadth of the claims, the nature of the invention, the state of the art, the level of one of ordinary skill in the art, the level of predictability in the art, the amount of direction provided in the Specification, the absence or the presence of working examples in the Specification and the quality of experimentation needed to make and use the claimed subject matter. See In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1998); Ex parte Forman, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986).

The claimed subject matter is limited to those aqueous, film-forming coating **compositions** capable of forming a water-resistant film at ambient temperatures. See, e.g., claim 1. The recitation of the water-resistant property above, together with the transition phrase "comprising", requires the claimed aqueous compositions to contain not only the specifically recited components (particular polyhydroxyalkanoate polyester particles), but also any other components (e.g., other conventional film-forming materials) which are not specifically claimed, but are necessary, to impart the claimed property. Id. In other words, the claimed subject matter specifically precludes those aqueous

compositions which are not capable of forming a water-resistant film at ambient temperatures. Id.

The examiner asserts that the specific working example in the specification constitutes the only enabling disclosure for the claimed subject matter. See the Answer, page 6. This enabling disclosure, according to the examiner (Answer, pages 4-6), is not commensurate with the scope of the claimed subject matter.[2]

The examiner has the initial burden of producing evidence and/or reasons to substantiate a rejection based on lack of enablement See In re Strahilevitz, 668 F.2d 1229, 1232, 212 USPQ 561, 563 (CCPA 1982), In re Marzocchi, 439 F.2d 220, 224 169 USPQ 367, 370 (CCPA 1971). It is incumbent upon the examiner to provide an adequate basis to question the sufficiency of the appellant's disclosure to enable a person skilled in the art to practice the entire scope of the claimed invention without "undue experimentation". See Gaubert, 524 F.2d at 1226, 187 USPQ at 667.

[2]In re Angstadt, 537 F.2d 498, 502, 190 USPQ 214, 217 (CCPA 1976)(a relevant inquiry is whether the scope of enablement is commensurate with the scope of the claimed subject matter).

Appeal No. 2001-2070
Application No. 09/232,110

We find that the Answer is devoid of any analysis explaining why "undue experimentation" is needed to practice the entire scope of the claimed invention. See the Answer in its entirety. The Answer does not analyze the effect of various Wands factors on the type of "experimentation" needed to practice the claimed subject matter. Id. Specifically, the examiner has not explained, much less demonstrated, why the generic disclosure, together with the specific working example, in the Specification, would not have guided one of ordinary skill in the art to practice the entire scope of the claimed subject matter without "undue experimentation". The examiner's reliance upon one of the examples disclosed in March '456 does not remedy these deficiencies in the examiner's analysis. It follows that the examiner has not carried his burden of establishing a prima facie case of unpatentability based on lack of enablement.

Accordingly, we are constrained to reverse the examiner's decision rejecting claims 1 and 11 through 26 under 35 U.S.C. § 112, first paragraph, as lacking an enabling disclosure for the subject matter presently claimed.

35 U.S.C. § 112, First Paragraph (Written Description)

The written description requirement under the first paragraph of Section 112 is distinct from the enablement